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EMPLOYMENT AND WAGE DYNAMICS IN ITALIAN INDUSTRIAL DISTRICTS

Alessandro Muscio[α] and Michele Scarpinato[β]

Abstract: *This paper is concerned with the analysis of differences in employment and wage growth rates inside and outside Italian industrial districts. On the basis of national statistical data, we compare employment and wage differentials in manufacturing industries between district and non-district areas. The aim is to investigate whether the industrial district model generates better labour conditions for sustaining employment performance and wage levels.*

Keywords: *industrial districts, employment, wages*

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1 INTRODUCTION

The large quantity of empirical evidence on industrial districts (IDs) has shown that they can be highly competitive and generate steady economic growth (FORTIS, 2000; GUERRIERI and IAMMARINO, 2003). Yet very little is known about the quantitative aspects of labour dynamics arising from this complex model of industrial organisation.

Following the conditions set by Piore and Sabel's model of flexible specialisation in industrial organisation (PIORE and SABEL, 1984), underlying the district theory is the idea that this model can generate employment and create the opportunities for good pay and optimal social conditions (PYKE and SENGERBERGER, 1996).

However, the reasons why such a model of territorial development is better able to mobilize human resources have not been systemically analysed in the literature. In fact, the literature offers no clear explanation of why the district environment may generate favourable employment dynamics (BRUSCO et al., 1996; PITINGARO et al., 2001). Furthermore, the empirical evidence on employment dynamics in districts obtained through dynamic comparison of employment performance in firms located inside and outside districts is very limited.

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Therefore, the gap we address in this study is substantive in terms of both method and relevance. In terms of method, there is no extensive statistical analysis of employment and wage differentials between district and non-district areas and of how such differences vary over time. Also, we do not know whether a district's employment and wage growth levels are accompanied by different firm growth trends. In other words, we do not know whether eventual differences in employment levels correspond to new firm formation or consolidation processes.

In terms of the relevance of the subject we find that the topic of employment performance in IDs is generally underestimated. First, evidence of any positive impact of the district model on employment and wage levels would obviously strengthen the argument of supporters of this model of territorial development that industrial policies should be more locally oriented. Secondly, evidence of the ability of districts to survive periods of general economic downturn, generating growth, or at least keeping employment levels constant, would introduce new perspectives into the ongoing debate on the decline of districts. Some of the literature is providing evidence that IDs may not be equipped to face the new competitive pressures (AMIN, 1999; BELUSSI 1999; GAROFOLI, 2002) and their potential advantage with respect to non-clustered industries may have been exaggerated (ENGELSTOFT et al., 2006). However, despite this, in some contexts,

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districts may still have competitive advantage compared to isolated firms in facing increasing competition. In other words, in Italy and other countries, districts may be in decline, but their growth performance might still be stronger than in the rest of the economic context in which they operate. Therefore, evidence must be provided of how non-district areas in the same national context and in the same industry, perform over the same period of time.

Given the above, the purpose of this paper is to investigate the dynamics of employment and wages in firms located inside and outside Italian IDs. We use Italian national statistical data to test whether districts offer better labour conditions in terms of employment and wage levels.

The paper is organised as follows: Section 2 discusses the theoretical background and the research hypothesis; Section 3 reports the empirical evidence. Concluding remarks follow.

2 THEORETICAL BACKGROUND

2.1 Definition of industrial district

The interest in IDs has been carried on the wave of the ability of such local productive systems to achieve outstanding economic success and to generate

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sustained development processes (BECATTINI, 1987, 1989; BRUSCO, 1989; GAROFOLI, 1989, 1992). Over the last two decades significant empirical evidence has shown how districts specialised in producing high quality products, have become competitive players in international markets (FORTIS, 2000; MAZZONI, 2001; NADVI and HALDER 2002; RABELOTTI, 1999; SAXENIAN, 1994; STORPER, 1993).

By definition the ID is:

> *a socio-territorial entity which is characterised by the active presence of both a community of people and a population of firms in one naturally and historically bounded area* (BECATTINI, 1990: 38).

District firms are generally small in size and, within one district, are specialised in the production of the same product/s. They share a common social and cultural background, which facilitates complementarity between activities and division of labour among local actors. In IDs technical and socio-cultural aspects are closely interwoven with the life of the community. The existence of this strong relationship between social and technical factors allows the co-existence of complex dynamics of cooperation and competition between local firms (BECATTINI, 1990).

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The competitiveness of districts relies on the collective efficiency of the local system, in which each firm exploits dynamic competitive advantages deriving from the existence of external economies and collective action (BELLANDI, 1992; GAROFOLI, 1989; SCHMITZ, 1999). A high degree of production specialisation generates continuous improvements in technology and production organisation (GOTTARDI, 2000). These improvements have multiplicative effects on the local system and are determined by continuous feedback effects between the increased competitiveness of individual firms and the system as a whole (GAROFOLI, 1989). As a result, districts are regarded as places where close inter-firm communication, socio-cultural structures and the institutional environment may stimulate socially and territorially embedded collective learning and continuous innovation (ASHEIM and ISAKSEN, 2002).

2.2 Employment dynamics in industrial districts

The results of the empirical studies on IDs have had an enormous impact on regional development policies. Research on districts has led to a general consensus among economists and policy makers that the territorial dimension plays a key part in economic development processes, and that districts may offer new opportunities for economic growth in both

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industrialised and developing countries (HUMPHREY and SCHMITZ, 1996; McCORMICK, 1999; NADVI, 1999; NADVI and SCHMITZ 1999; SCHMITZ, 2000).

Underlying, this interest in the district model and the adoption of what in the policy makers' jargon is termed the *'cluster approach'*, there is the idea that clustering of firms producing similar products may generate wealth and offer new opportunities for policy intervention. Clustering is seen as setting new frontiers for industrial development planning in offering new opportunities to set *'high roads to development'* (PYKE and SENGENBERGER, 1992). There is general agreement that the organisation of production in districts sustains employment performance and wage levels. According to Glaeser et al. (1992), cluster firms should exhibit higher employment levels and higher rates of employment growth compared to production that is not clustered.

Studies on districts have also underlined that, compared to other forms of small firm organisation, districts seem to have the capability of providing good wages and social conditions (CASAVOLA et al. 1999; SOLINAS, 1991). This aspect of the district model has been of special interest for international organisations such as the International Labour Organization (ILO) (COSSENTINO et al., 1996; PYKE et al., 1990) and more recently the United Nations Industrial Development Organization (UNIDO) (NADVI

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and BARRIENTOS, 2004; UNIDO, 2001), which have identified new perspectives for industrial development for countries and regions with economies essentially based on small and medium sized enterprises (SMEs).

Indeed, the ID literature puts great emphasis on the key role of human capital in districts' competitiveness. According to PYKE and SENGENBERGER (1996), job creation in most Italian districts has been as good as or better than the national average. Unemployment is generally lower and wage levels are generally reported to be at least equal to, and often above national levels. Evidence from industrial clusters in other parts of the world also seems to confirm these trends (ISAKSEN, 1996; MARTIN and SUNLEY, 2003; NADVI, 1999; KARLSSON and KLAESSON, 2000). Other authors point out the abilities of districts to quickly and efficiently react to external challenges. This allows them to minimise the negative effects of changes in market demand, or economic downturns, on district performance and therefore on employment (GAROFOLI, 2002; NADVI and SCHMITZ, 1999).

Confirming these insights, some authors argue that the efficiency of SMEs in districts also stems from good working conditions (BRUSCO et al., 1996; SIGNORINI, 2000) especially for highly skilled workers (BRUSCO, 1991; OCCARI and TATTARA, 1997). According to BECATTINI (1987) several mechanisms such as information sharing in relation to workers' personal

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and professional qualities, and employment as a factor of attraction to (and retention in) the district of the best qualified workers.

Similarly, SIGNORINI (2000) argues that in IDs wage levels are normally higher than in larger firms, and higher than the national average. However, in the Italian context some studies have suggested that the relationship between wage levels and districts is controversial (De BLASIO and DI ADDARIO, 2002; PITINGARO et al., 2001; TATTARA, 2001).

In summary, several studies make reference to the relevance of district effects on employment. It is argued that the district model can and does guarantee good socio-economic conditions in the form of higher salaries and sustained employment performance. However, there is no conclusive view about the factors that converge to the competitive advantage of districts. Similarly, there is no systematic empirical evidence of the extent to which employment and wage levels are effectively higher in districts and of whether eventual differences between district and non-district areas tend to diverge or converge over time.

In our view there are several factors, which jointly may contribute to better employment performance and better salaries in districts:

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1. **Agglomeration economies.** Agglomeration economies and economies of scale and scope (BELLANDI, 2002) generate superior competitiveness in local systems, which in turn leads to higher employment performance and better wages;
2. **Near-perfect information regimes.** Local knowledge spillovers stimulate flows of information on available positions and available workforce in the district area. Information flows on demand and supply of labour in the local labour market generate the efficient allocation of human resources and reduce the costs to firms of finding appropriate labour (AUDRETSCH and FELDMAN, 1996);
3. **Microeconomic effects of demand for labour.** High employment rates increase the price of labour as companies offer higher wage levels in order to fill vacant positions. In some cases these employment dynamics can 'heat up' the local labour market and the unemployment rate can approach near-frictional levels (MUSCIO, 2006a).
4. **Demand for skilled labour.** Districts are knowledge intensive environments where firms introduce innovative and qualitatively advanced products (GOTTARDI, 2000; MASKELL, 2001; MUSCIO, 2006b). The competitiveness of the local system is sustained by the use of skilled workers, who are rewarded with higher pay than they would receive elsewhere.

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5. **Reduction of wage disparities.** High employment rates and continuous information flows help to reduce wage disparities within districts. The efficient circulation of information on wages offered in the local system and the dynamic nature of the local labour market generate a continuous optimisation of human resources allocation. These factors reduce wage disparities and generate stable social conditions.

In addition, the well-documented competitiveness of districts is also said to translate into favourable work conditions. Efficient utilisation of resources provides evidence of the endogenous nature of this model of territorial development and its effectiveness as a viable solution in economic planning. The district model can offer extraordinary opportunities for provision of satisfactory social conditions and is rightly seen as a sustainable approach in the development of SMEs systems in the development context (NADVI and BARRIENTOS, 2004).

The scope of this work is to provide a systemic analysis of employment and wage dynamics inside and outside Italian IDs. On the basis of national statistical data, this study provides evidence of the recent dynamics of labour in Italian firms in different manufacturing industries. We test the following research hypotheses:

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Hypothesis 1: there are relevant static and dynamic differences in employment and wage levels between ID and non-ID areas.

Hypothesis 2: the ID model sustains firms' competition allowing better employment levels.

In the following sections we analyse the differences in employment and wage levels between ID and non-ID areas taking into consideration different industry sectors, geographic areas (north, central and southern Italy), firm size and employee qualifications. We also test via econometric analysis the impact of the 'district effect' on employment growth in Italy over the period 1991-2001.

3 EMPIRICAL EVIDENCE

3.1 Introduction to the research methodology

In the empirical evidence we refer to two different data sources:

1. Employment data obtained from the Italian statistical institute, *Istituto Nazionale di Statistica* (ISTAT) and which refer to the 1991 and 2001

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Censuses. We considered data for all manufacturing sectors. We excluded public institutions from our analysis.

2. Data on wages were obtained from the Italian social security agency, *Istituto Nazionale di Previdenza Sociale* (INPS). INPS data used here refer to four macro- manufacturing industries and consider both "white collar" and "blue collar" workers. INPS data are available for the period 1994-98.[1]

We use here the definition of IDs proposed by ISTAT in its 1991 classification of districts. ISTAT has not issued an updated classification of districts on the basis of the 2001 Census data. ISTAT identifies as districts 199 Local Labour Systems (LLS), with a total of 5,110,930 employees.[2] Table 1 reports the regional distribution of districts and non-district LLS. It can be seen that the majority of districts are concentrated in northern and central Italy.

[2] The criteria followed by ISTAT in the identification of IDs in Italy are built on the basis of the conditions set in 1993 by the Ministry of Productive Activities (MAP). These conditions focus on LLS, which are groups of neighbour communes where labour mobility is self-contained. MAP identifies as industrial districts those LLS areas that meet the following conditions:
a) employment share in manufacturing activities above the national average;
b) employment share in SMEs above the national average;
c) employment share in the main manufacturing activity above the national average;
d) employment share in SMEs in the main manufacturing activity above the national average.

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TABLE 1

We split Census data on economic activities into two groups: firms located in IDs and firms located outside IDs. Section 3.2 presents a comparison of employment dynamics in district and non-district areas over the period 1991-2001. Data on employment performance was weighted based on the number of employees in 1991. Differences in performance between district and non-district areas were tested using an independent samples T-test. Section 3.3 adopts the same methodology for the analysis of differentials in terms of wealth and productivity between the two areas. In Section 3.4 we used INPS data to estimate differences in the growth and dispersion of salaries inside and outside IDs in selected manufacturing industries. INPS reports salary data filed by economic sector and Italian administrative units (provinces).[3] Finally, Section 3.5 presents the econometric analysis of the impact of the 'district effect' on employment growth.

3.2 Employment dynamics in districts

In 2001 in Italy there were 1,342,000 local units in district areas (28.8% of total local units), employing a total of 5,111,930 staff (31.5% of total national employment) (Table 2). In the manufacturing industry there were

[3] Provinces correspond to NUTS 3 units in the *Eurostat* classification of administrative units in Europe. The average dimension of Italian provinces is 2,926.6 Km2.

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238,139 local units located in districts (40% of total units) employing 2,205,304 staff (45% of total employment).

TABLE 2

We compared activity, employment and unemployment rates between district and non-district areas, in all Italian macro-regions (Table 3). This allowed analysis of employment performance *within* each individual macro-region.[4] According to the latest ISTAT data (ISTAT, 2002) employment performance in districts appears to be more favourable than elsewhere: in each macro-region, activity and employment rates in district areas were higher while unemployment rates were consistently lower. Differences in average means are always statistically significant, except for the South and the Islands. Confirming this, of the 199 districts considered here, only ten have unemployment rates higher than the Italian average; all of these are located in Southern Italy[5] where unemployment rates are typically higher than in the rest of the country. However, these ten Southern districts have unemployment rates lower than those found in their neighbouring areas.

TABLE 3

[4] IDs are concentrated in the North and Central regions (Bagnasco, 1977), which perform better than the South and the Islands.
[5] They are: Sora, San Marco Dei Cavoti, Montemiletto, Solfora, Taurasi, Barletta, Putignano, Martina Franca, Bisognano and Maierato.

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We analysed employment dynamics over the period 1991-2001 (Table 4). This period has seen two different phases of the economic cycle. Whilst in the first half of the decade there was an increase in national exports, the second half saw a rapid erosion of the positive trade balance. This was the result of increasing competition in international markets, especially in traditional manufacturing sectors.

Overall, during the period considered employment in the manufacturing industries diminished (-6%), although the total number of manufacturing companies remained basically unchanged (-0.2%). At the same time, the total number of companies and total employment grew at respectively 9.1% and 24.4%.

Over the period considered the average growth in employment in the total economy was higher in districts than in non-district areas. At the regional level, statistically significant differences can be found in the North-West macro-region. Employment growth in manufacturing sectors was better in districts than in non-district areas in each macro-region; only in the case of South and the Islands were differences between means not statistically significant.

In district areas the average growth in the total number of local units was lower than elsewhere (21.2% vs. 28.6%); similarly, despite the increase in

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employment, the number of manufacturing companies in districts decreased (-2.9%), whilst in non-district areas it marginally increased (1.7%).

TABLE 4

Although they are of differing intensity, the majority of manufacturing industries show positive trends for employment performance: Table 5 reports data on companies and employment inside and outside districts, filed with the *NACE* classification. In several sectors there are sharp differences between district and non-district areas in terms of employment growth: districts outperform other areas in many sectors - sometimes by very large margins. Textiles, leather and tanning industries[6] are the only industries where employment performance was worse in districts than outside them.

These figures show that in Italy as elsewhere in Europe, over the period studied, , the manufacturing industry has visibly reduced in importance in economic terms. In aggregate terms, despite the increase in the number of companies, employment levels have fallen in most sectors. Yet, despite reductions in the number of companies, employment levels in districts seem to be more stable than in non-district areas. This seems to support the arguments in favour of the superior capabilities of districts to react to

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market changes (GAROFOLI, 1994), which have been highlighted in several empirical works on Italy and other countries (HUMPHREY and SCHMITZ 2002; MUSCIO, 2004; RABELOTTI, 1995).

TABLE 5

The reduction in the number of companies in district areas does not appear to be a consequence only of negative industrial performance: rather it appears to be due to consolidation processes and the reorganization of value chains within local industrial systems. It is likely that in districts specialised in technologically mature sectors a selection process is in operation. Within districts smaller firms are closing down or are being taken over by more competitive businesses and the number of newly formed companies is weakening (GAROFOLI, 2002). The analysis of employment data filed by firm size helps to explain these issues.

Table 6 presents trends in employment growth filed by firm size for the period 1991-2001. Data on companies located outside district areas show a reduction in the number of micro-units (1-9 employees), a modest increase in the number of units in intermediate classes (50-249 employees) and a sharp decrease in the number of units in the larger class (250 or more).

[6] The footwear sector in Italy has suffered from a radical process of re-organisation of

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TABLE 6

The number of employees in micro and small units has decreased more for firms in districts than outside districts. On the contrary, employment in medium-size and large companies has grown much more in districts than outside districts. These data seem to confirm that within districts a selection process is cutting out of business smaller units (such as handicraft businesses) and is sustaining larger units. This trend is generally common to macro-regions. Smaller manufacturing units cannot compete in increasingly competitive markets, especially when they are involved in technologically mature sectors. On the other hand, larger firms in districts have developed new markets and activities, becoming increasingly competitive, growing and employing new staff (BUTERA, 1997; FERRUCCI and VARALDO, 1993; VARALDO, 1994).

We can conclude that the development process followed by districts is markedly different from that followed by manufacturing firms in the rest of the country. Over the period 1991-2001 increasing international competition has imposed major changes on the organisation of production of districts: in traditional industries in particular, the outsourcing of low value-added

production and delocalisation of production to countries with lower labour costs (Amighini

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activities and progressive mergers and acquisitions have caused a reduction in employment in micro-units and growth in employment in larger companies (AMIGHINI and RABELOTTI, 2003: MUSCIO, 2004). This process is considered a necessary condition for competing in international markets (RULLANI, 1997; VARALDO and FERRUCCI, 1997).

Overall, districts have been able to respond more promptly to the challenges of global competition. In districts, employment levels in manufacturing industries have remained constant, counterbalancing the negative employment performance of non-district areas.

3.3 Dynamics of value added in districts

We studied differences in wealth and productivity between district and non-district areas across the period 1996-2001. We measured value added (VA) per inhabitant and VA per employee in the total economy and in the manufacturing industries.

At the beginning of the period considered (1996) VA per inhabitant was higher in district areas than in non-district areas in most macro-regions. However, after five years VA per inhabitant was quite similar in the two areas (Table 7).

In the total economy VA per employee levels are fairly similar inside and outside districts, although over the period 1996-2001 growth was marginally higher in districts. In 2001 in manufacturing sectors VA per employee was

and Rabelotti, 2003).

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over 4,000 Euro lower than in non-district areas. This is not surprising, considering that districts are generally specialised in traditional sectors. However, growth has been marginally higher in districts than outside them (15.9% vs. 15.2%).

At the regional level, district areas in southern Italy and in the Islands have performed much better than non-district areas, both in terms of productivity growth and in terms of wealth increase.

Unfortunately, due to data limitations we were not able to control for VA differentials in individual industrial sectors and in different size classes of firms.

TABLE 7

3.4 Dynamics of salaries in districts

We complete our descriptive analysis of employment dynamics with a study of wage differentials between district and non-district areas in four manufacturing macro-industries: machinery - metal products, leather, shoes and textiles - clothing products, rubber and plastics, and woodworking. We used INPS data and selected some of the industry sectors in which Italian districts are specialised.[7]

[7] INPS are filed using the *NACE* 81 classification system. INPS data are not available for all manufacturing sectors. One of the four sectors studied here is the macro-sector *leather-*

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We compare industry-specific wage levels in administrative units where, according to ISTAT, districts are located, with industry-specific wage levels in provinces where there are no districts. Thus, for example, we compare average salaries in the textile industries in provinces such as Varese and Biella which have textiles districts, with salaries in textiles manufacturing in provinces such as Milan and Turin, where there are no textiles districts. Estimations are filed by employee occupation: *white-collar* and *blue-collar*.[8]

Table 8 shows how, besides generating more employment, districts also have better wage levels. Both *blue-collar* and *white-collar* workers working in districts earn higher salaries than employees working outside districts, and this is the case for all the manufacturing sectors considered.

Over the period 1994-98 wage growth was higher in district than in non-district areas. This was also the case in traditional industries, such as production of leather and textile products, where employment decreased (see Table 5). Wage levels are especially high in the case of white-collar workers employed in district areas.

shoes-textiles-garment. Although ISTAT identifies districts both in the sectors *leather-shoes* and in *textiles-clothing*, INPS data on wages refer to textiles and to clothing-shoes separately. Therefore we had to merge these two industries in order to estimate district data using the ISTAT classification of districts.

[8] Unfortunately, the INPS database does not allow us to control for firm size. However, according to ISTAT data differences between district and non-district areas in terms of share of employment in small firms are negligible (employment in micro-units is 27% of total employment in districts and 24% outside districts. Similarly, employment share in small firms is respectively 57% and 63%).

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TABLE 8

FIGURE 1

The diverging trends in terms of wage growth support the results on employment growth reported in the previous section (Figure 1). Furthermore, differences in wage growth in mature sectors such as textiles and leather manufacturing, is evidence that although the number of local units has dramatically reduced in districts, they have been able to preserve above-average wage and wage growth levels.

Similar results emerge when the wage dispersion index is considered (Table 9). This index is used by INPS to estimate the dispersion of average yearly wages. The lower the coefficient, the more precise is the estimation of average wages. Wage dispersion is much lower in districts areas than in non-district areas for all the sectors considered, and is lowest for blue-collar workers. The wage differential for workers inside districts is much lower than outside districts, contributing to the creation of a socially more stable and egalitarian environment.

Time-series analysis over the period 1994-98 confirms that the dispersion index has been fairly stable over time. In fact, over the four-year period considered wage differentials remained stable or changed only slightly.

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Only in the case of the *leather-shoes* and *textiles-clothing* industries have differences between district and non-district areas diminished over time. In the case of woodworking the dispersion index decreased further in districts, while elsewhere it increased.

TABLE 9

To summarise, data on salaries largely confirm the findings on employment dynamics reported in Section 3.2. Even in periods of economic slowdown, districts offer more employment opportunities and better salaries than other areas. Data on wage levels also show that as a consequence of district – effects, dispersion of salaries is much lower than elsewhere, contributing to reducing wage inequality within IDs. Growth dynamics confirm this trend in the case of both employment and wage data: over the time lag considered the competitive advantage of districts in these areas of analysis increased even more.

3.5 Econometric analysis

We conclude our empirical analysis on employment differentials between district and non-district areas by measuring the impact of localization in IDs on employment growth over the period 1991-2001. We run an Ordinary Least Squares (OLS) regression model. On the basis of the descriptive analysis presented in previous sections, we identified several control

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variables to be introduced in the regression together with the indicator for firms' localisation in districts.

The data used in the regression are analysed at the LLS level. ISTAT provides data for 784 LLS in total, 199 of which are districts (see Table 1). The cases are weighted using population weights, controlling for LLS employment levels in 1991. The weighted model used here is the following:

$$emp\_growth_i = \beta_0 + \beta_1 district_i + \beta_2 emp\_91_i + \beta_3 unem\_rate_i + \beta_4 VAemp\_86\_ind_i + \beta_5 NE_i + \beta_6 NW_i + \beta_7 C_i \quad (1)$$

where *emp_growth* indicates employment growth in manufacturing industries (1991-2001), *district* is a dummy controlling for localisation in a district, *emp_91* indicates employment in manufacturing in 1991 (stock value), *unem_rate* is the unemployment rate, *VAemp_96ind* is VA per employee in industry and *NE, NW* and *C* are geographical dummies controlling respectively for localisation in North-East, North-West and Central Italy.[9]

The estimation results are reported in Table 10.[10] The second column of Table 10 reports estimated coefficients and t statistics in parentheses.

[9] The geographical dummy SI, indicating localisation in southern Italy and in the Islands was removed from the regression to avoid perfect multicollinearity. We measured correlation between variables and found no significantly high coefficients.
[10] Descriptive statistics are available from the authors on request.

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TABLE 10

According to the results in Table 10, localisation of firms in districts (*DISTRICT*) has a strongly positive effect on firms' employment growth. Confirming the descriptive analysis presented in Section 3.2, these results support the insights of district studies on the positive effects of the district model on firms' competitiveness and growth (BRUSCO et al., 1996; PYKE and SENGERBERGER, 1996).

Employment stock values at the beginning of the period (*EMP_91*) have virtually no impact on employment growth. The estimated coefficient is negative and close to zero. The unemployment rate in 1991 has a negative impact on employment growth (*UNEM_RATE*), whilst productivity in industry (*VAEMP_96IND*) has no significant impact. Finally, confirming the *catching-up* process in manufacturing industries evidenced in Table 4, localisation in central and northern regions has a negative impact on employment growth.

In conclusion, the results of the econometric analysis corroborate the descriptive analysis reported in previous sections. The OLS regression provides evidence that the ID model of industrial organisation is able to sustain firms' competitiveness and consequently employment growth.

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4 Concluding remarks

Several studies on IDs have argued that such dynamic systems can offer higher employment rates and better wage levels. However, empirical evidence on employment dynamics in districts has so far been scarce. This study contributes to filling this gap in the industrial districts literature by providing extensive evidence on the dynamics of employment and salaries inside and outside Italian districts.

The empirical investigation was carried out using data from national statistical sources. The data provide evidence that when district firms and non-district firms are observed separately, relevant differences in employment and wage levels emerge.

Following a trend common to many EU countries, over the ten period 1991-2001 employment in manufacturing industries in Italy has declined. However, over this period IDs have been able to preserve employment levels in most economic sectors and, in contrast to national trends, in some sectors employment has risen. In fact, whilst the number of firms in districts has basically remained constant, overall employment growth has more likely been associated with firm growth.

Data on salaries confirm district performance. Overall both blue-collar and white-collar employees working earn higher salaries in IDs than elsewhere

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and their salaries have grown more steadily over the period 1994-98. Furthermore, within districts wage differentials seem to be lower, providing evidence that working conditions in districts may be more homogeneous.

Finally, in order to assess causality between firms' location and employment growth this paper applied an econometric analysis to measure the impact of localisation in districts on employment growth. Even controlling for localisation in different geographical areas of Italy, the econometric analysis confirms that the district effect has a strongly positive impact on employment growth.

Therefore, if the question is whether it is better to work inside or outside an ID, the data clearly show that in the Italian case IDs do offer better standards of living, with their higher wage and employment levels, and higher rates of wage growth. Although in the last few years, and following international economic trends, the number of manufacturing firms has declined, district firms have often been able to contain this reduction in employment and, in some industries, have even achieved increases in the number of employees. Despite the fact that districts are essentially based on SMEs, employees working in districts earn higher salaries than other employees, and gain from lower wage differentials. Wages for blue-collar workers in particular suffer from very little dispersion in IDs, and this

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contributes to the creation of a very socially stable environment in which workers are not continually searching for better paid jobs.

In conclusion, this paper proves that the validity of the district model as a successful model for economic development lies in the extraordinary competitiveness it can provide to businesses, and in the favourable working conditions it is able to create. Indeed, the ID model has the capability to provide good pay and satisfactory social conditions combining economic vitality and egalitarian labour conditions.

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Tables and figures

Table 1 District and non-district LLS in Italy (2002).

	North West	North East	Centre	South and Islands	Italy
District areas	59	65	60	15	199
Non-district areas	81	78	77	349	585
Total	140	143	137	364	784

Source: Authors' calculation based on ISTAT Census data.

Table 2 Summary data on economic activities inside and outside districts (2001).

	Total economy		Manufacturing industry	
	Local units	Employees	Local units	Employees
	Total values			
District areas	1,341,676	5,110,930	238,139	2,205,304
Non-district areas	3,315,099	11,090,501	352,428	2,691,813
Total	4,656,775	16,201,431	590,567	4,897,117
	% values			
District areas	28.8	31.5	40.3	45.0
Non-district areas	71.2	68.5	59.7	55.0
Total	100.0	100.0	100.0	100.0

Source: Authors' calculation based on ISTAT Census data.

Table 3 Employment inside and outside districts (2002).

	% average rates				
	North West	North East	Centre	South and Islands	Italy
Activity rate					
District areas	52.5	53.7	50.4	45.5	52.4
Non-district areas	51.0	51.9	48.3	44.1	49.0
	**	**	**		**
Employment rate					
District areas	50.7	51.8	47.9	40.8	50.4
Non-district areas	48.6	50.0	44.8	36.0	45.0
	**	**	**	**	**
Unemployment rate					
District areas	3.5	3.4	4.9	10.3	3.9
Non-district areas	4.7	3.7	7.4	18.5	8.5
	**	**	**	**	**

Independent samples T-Test: * significant at 5% level; ** significant at 1% level.
Source: Authors' calculation based on data from ISTAT (2002).

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Table 4 Local units and employment growth (1991-2001).

	% average growth rate				
	North West	North East	Centre	South and Islands	Italy
Employees					
District areas	9.3	13.8	10.1	6.2	11.0
Non-district areas	5.8	12.1	10.2	6.9	8.0
	**				**
Local units					
District areas	22.9	21.7	16.3	20.3	21.2
Non-district areas	33.2	21.9	33.6	23.0	28.6
	**		**		**
Employees (Manufacturing)					
District areas	-5.8	3.4	1.4	-1.1	-0.9
Non-district areas	-18.3	0.0	-12.2	-3.5	-10.2
	**	*	**		**
Local units (Manufacturing)					
District areas	-4.5	-2.0	-3.3	10.7	-2.9
Non-district areas	-1.1	-3.1	2.6	8.8	1.7
	**		**		**

Independent samples T-Test: * significant at 5% level; ** significant at 1% level.
Source: Authors' calculation on ISTAT Census data.

Table 5 Employment growth in manufacturing activities (1991-2001).

	Total values (2001)		% average growth rate (1991-2001)		
Employment	District areas	Non-District areas	District areas	Non-District areas	
Food and tobacco industry	154,356	297,647	4.0	-5.6	**
Textiles	217,497	91,990	-26.5	-9.0	*
Clothing	162,179	136,062	-27.5	-30.7	
Leather and tanning industries	133,041	72,994	-33.0	-23.2	*
Woodworking and wood products	77,960	108,067	-0.9	-9.2	**
Paper	39,822	44,390	12.1	16.6	
Publishing and printing	49,597	124,884	10.0	-0.4	**
Coke, oil, fuels	1,687	22,850	60.0	12.1	**
Chemicals and chemical products	58,217	146,936	32.6	27.9	
Rubber and plastics	104,396	112,480	45.6	54.3	
Processing of non-metallic minerals	115,032	138,756	-0.9	-11.4	**
Metalworking	58,477	80,810	65.6	48.7	

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Metal products	336,433	364,551	22.9	13.0	**
Mechanical appliances and machinery	300,658	296,886	28.3	25.3	
Office machinery and computers	4,150	15,107	419.6	125.7	**
Electrical machinery	89,462	121,942	50.4	27.4	
Radio, television and communication equipment	20,650	86,928	17.8	7.5	
Medical, precision and optical instruments	46,308	79,696	35.4	10.6	**
Means of transport	38,060	134,872	63.6	51.1	
Other transport equipment	19,741	83,355	45.9	14.5	
Other manufacturing industries	174,622	126,803	-2.5	5.3	
Recycling	4,809	8,857	267.8	254.1	
Total manufacturing industry	2,207,154	2,696,863	-0.9	-10.2	**

Note: Independent samples T-Test: * significant at 5% level; ** significant at 1% level.
Source: Authors' calculation on ISTAT Census data.

Table 6 Employment growth in manufacturing activities, filed by size (1991-2001).

Size class	% average growth rate				
	North West	North East	Centre	South and Islands	Italy
1-9					
District areas	-10.8	-6.9	-6.8	-2.3	-8.4
Non-district areas	-9.3 *	-8.4	-5.5	0.1	-6.1 **
10-49					
District areas	-5.6	3.0	4.6	-7.8	-0.6
Non-district areas	-8.2	0.3	-4.0 *	15.8 *	0.1
50-249					
District areas	2.6	15.2	13.5	10.6	9.5
Non-district areas	-3.8 *	11.4	4.9	7.0	3.2 *
250 or more					
District areas	-6.7	20.6	15.2	14.4	8.1
Non-district areas	-35.1 **	4.7	-26.2 **	-16.5 *	-21.6 **
Total					
District areas	-5.8	3.4	1.4	-1.1	-0.9
Non-district areas	-18.3 **	0.0 *	-12.2 **	-3.5	-10.2 **

Independent samples T-Test: * significant at 5% level; ** significant at 1% level.
Source: Authors' calculation based on ISTAT Census data.

Table 7 Value added growth (1996-2001).

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Average VA (K euro, 2001)	North West	North East	Centre	South and Islands	Italy
Per inhabitant					
District areas	20.8	22.8	19.3	13.2	21.1
Non-district areas	26.0 **	23.3	20.6 *	13.2	21.3
Per employee					
District areas	50.4	48.5	45.1	38.2	48.4
Non-district areas	54.2 **	51.1 **	49.2 **	42.0 *	49.7 **
Per employee (Manufacturing)					
District areas	46.3	44.8	38.6	32.8	44.0
Non-district areas	53.4 **	48.6 **	47.6 **	39.9 **	48.1 **

Average VA % growth (1996-2001)	North West	North East	Centre	South and Islands	Italy
Per inhabitant					
District areas	11.7	14.9	18.1	21.1	14.3
Non-district areas	16.9 **	15.5	15.3 *	18.0	16.6 **
Per employee					
District areas	15.2	14.0	18.3	23.7	15.9
Non-district areas	15.4	15.3	16.2 *	17.0 *	15.5
Per employee (Manufacturing)					
District areas	16.3	14.6	15.5	32.5	15.9
Non-district areas	15.3	14.7	17.2	13.9 **	15.2

Independent samples T-Test: * significant at 5% level; ** significant at 1% level.
Source: Authors' calculation based on ISTAT data (2002).

Table 8 Salaries inside and outside industrial districts (Euro, 1994-98).

Blue Collars	District areas	Non-District areas	% Diff.	District areas	Non-District areas	
	Total values (1998)			% Growth (1994-98)		
Machinery - Metal Products	18,287	16,944	7.9	16.2	13.1	**
Leather/Shoes - Textiles/Garment	14,640	14,160	3.4	14.7	12.6	
Rubber. Plastic Products	17,444	16,833	3.6	15.4	13.8	
Woodworking	15,411	14,909	3.4	15.1	12.9	**

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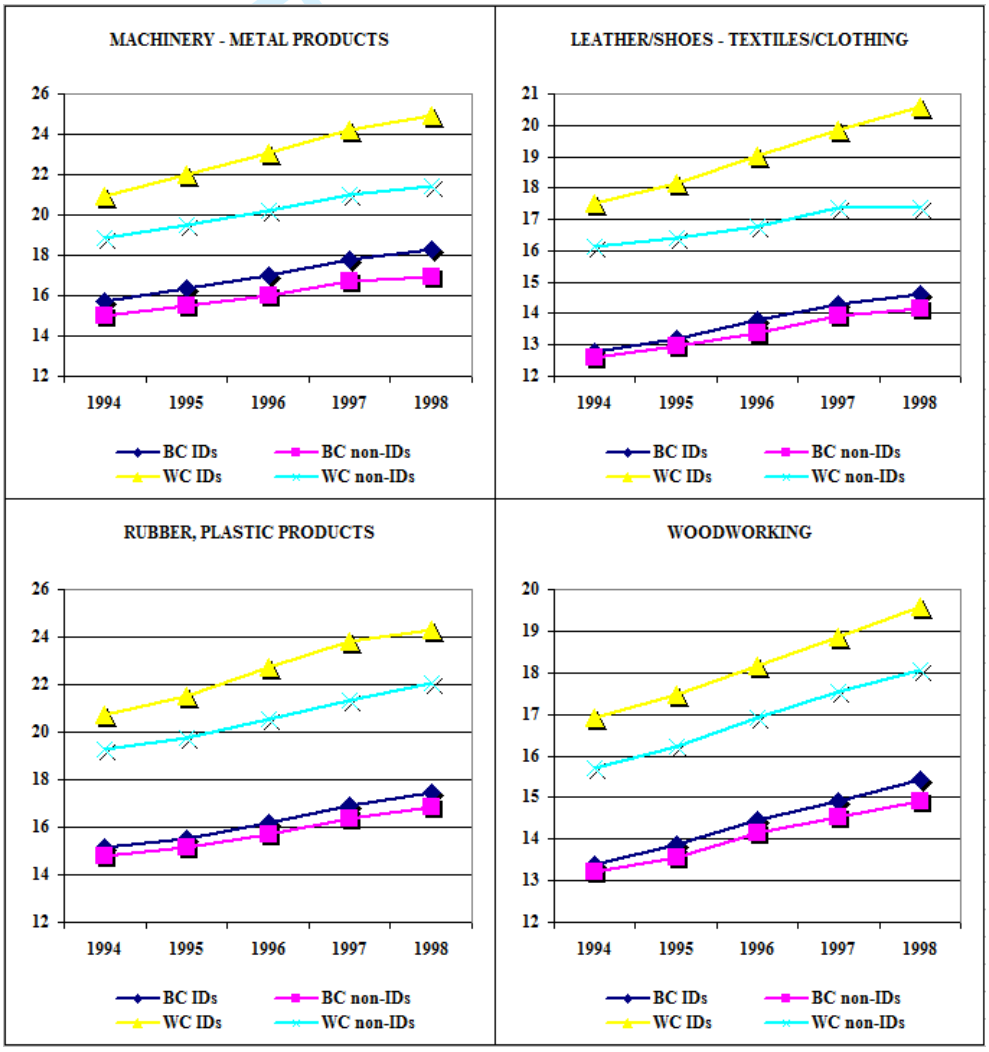
White Collars	Total values (1998)		% Diff	Growth (1994-98)		
Machinery - Metal Products	24,915	21,452	16.1	19.0	13.7	**
Leather/Shoes - Textiles/Garment	20,570	17,394	18.3	17.4	8.0	*
Rubber. Plastic Products	24,328	22,080	10.2	17.4	14.7	
Woodworking	19,586	18,077	8.3	15.9	15.2	

Independent samples T-Test: * significant at 5% level; ** significant at 1% level.
Source: Authors' calculation based on INPS data.

Figure 1 Growth of salaries inside and outside industrial districts (Euro, 1994-98).



Source: Authors' calculation based on INPS data.

Table 9 Salaries inside and outside industrial districts: Index of dispersion (Euro, 1994-98).

Blue Collars	District areas	Non-District areas	% Diff.	District areas	Non-District areas	
	Total values (1998)			% Growth (1994-98)		
Machinery - Metal Products	0.64	1.73	-63%	1.1%	1.3%	
Leather/Shoes - Textiles/Garment	1.37	2.81	-51%	9.2%	-1.2%	
Rubber. Plastic Products	0.77	2.29	-66%	2.9%	-0.1%	
Woodworking	0.59	1.28	-53%	-0.8%	6.8%	*
White Collars	Total values (1998)		% Diff.	% Growth (1994-98)		
Machinery - Metal Products	1.16	3.70	-69%	-1.4%	1.5%	
Leather/Shoes - Textiles/Garment	3.83	5.22	-27%	21.2%	-3.2%	
Rubber. Plastic Products	1.44	4.59	-69%	6.6%	0.1%	
Woodworking	1.96	3.81	-49%	-6.3%	3.9%	

Independent samples T-Test: * significant at 5% level; ** significant at 1% level.
Source: Authors' calculation based on INPS data.

Table 10 Impact of the district effect: OLS estimations

	Emp_growth
District	0.039*
	(2.25)
Emp_91	-0.000**
	(4.54)
Unem_rate	-0.012**
	(3.99)
VAemp_96ind	0.001
	(0.65)
NE	-0.143*
	(2.43)
NW	-0.227**
	(3.90)
C	-0.180**
	(3.55)
Constant	0.152*
	(2.13)
Observations	784
R-squared	0.310

Robust t statistics in parentheses: * significant at 5%; ** significant at 1%

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